

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A glycosylation-deficient hepatocyte growth factor having no sugar chains, and having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor.

2-3. (Cancelled)

4. (Previously Presented) The glycosylation-deficient hepatocyte growth factor according to claim 1, wherein the hepatocyte growth factor is human hepatocyte growth factor.

5. (Previously Presented) The glycosylation-deficient hepatocyte growth factor according to claim 1, wherein the hepatocyte growth factor is feline or canine hepatocyte growth factor.

6. (Previously Presented) The glycosylation-deficient hepatocyte growth factor according to claim 1, which is modified based on the amino acid sequence of SEQ ID NO: 1, wherein modifications represented by (a) to (e) below are applied to the amino acid in SEQ ID NO: 1:

(a) substitution of amino acid 294 and/or 296 by another amino acid, and/or substitution of amino acid 295 by Pro, leading thereby to no glycosylation of the amino acid 294;

(b) substitution of amino acid 402 and/or 404 by another amino acid, and/or substitution of amino acid 403 by Pro, leading thereby to no glycosylation of the amino acid 402;

(c) substitution of amino acid 476 by another amino acid, resulting in no glycosylation of the amino acid 476;

(d) substitution of amino acid 566 and/or 568 by another amino acid, and/or substitution of amino acid 567 by Pro, leading thereby to no glycosylation of the amino acid 566; or

(e) substitution of amino acid 653 and/or 655 by another amino acid, and/or substitution of amino acid 654 by Pro, leading thereby to no glycosylation of the amino acid 653.

7. (Currently Amended) The glycosylation-deficient hepatocyte growth factor according to claim 1, which is modified based on the amino acid sequence of SEQ ID NO: 2, wherein modifications represented by (a) to (e) below are applied to the amino acid in SEQ ID NO: 2:

(a) substitution of amino acid 289 and/or 291 by another amino acid, and/or substitution of amino acid 290 by Pro, leading thereby to no glycosylation of the amino acid 289;

(b) substitution of amino acid 397 and/or 399 by another amino acid, and/or substitution of amino acid 398 by Pro, leading thereby to no glycosylation of the amino acid 397;

(c) substitution of amino acid 471 by another amino acid, leading thereby to no glycosylation of the amino acid 471;

(d) substitution of amino acid 561 and/or 563 by another amino acid, and/or substitution of amino acid 562 by Pro, leading thereby to no glycosylation of the amino acid 561; or

(e) substitution of amino acid 648 and/or 650 by another amino acid, and/or substitution of amino acid 649 by Pro, leading thereby to no glycosylation of the amino acid 648;

8. (Previously Presented) A DNA comprising a base sequence encoding the hepatocyte growth factor according claim 1.

9. (Original) A vector integrated with the DNA according to claim 8.

10. (Previously Presented) A method for producing the glycosylation-deficient hepatocyte growth factor according to claim 1 comprising the steps of: introducing a vector integrated with a DNA comprising a base sequence encoding the glycosylation-deficient hepatocyte growth factor having no sugar chains into a cell; culturing the cell; producing a glycosylation-deficient hepatocyte growth factor in the cell or into the cell culture medium; and recovering and purifying the glycosylation-deficient hepatocyte growth factor from the cell or from the cell culture medium.

11. (Original) The method according to claim 10 for producing the glycosylation-deficient hepatocyte growth factor, wherein the cell is a eukaryotic cell.

12. (Original) The method according to claim 11 for producing the glycosylation-deficient hepatocyte growth factor, wherein the eukaryotic cell is a yeast or an insect cell.

13. (Previously Presented) A method for producing the glycosylation-deficient hepatocyte growth factor according to claim 1, comprising the steps of: introducing a vector integrated with a DNA comprising a base sequence encoding the glycosylation-deficient hepatocyte growth factor having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor into an insect individual, allowing the insect individual to produce the glycosylation-deficient hepatocyte growth factor, and recovering and purifying the glycosylation-deficient hepatocyte growth factor from the insect individual.

14. (Cancelled)

15. (Previously Presented) A method for producing the glycosylation-deficient hepatocyte growth factor according to claim 1, comprising the steps of: introducing a vector integrated with a DNA comprising a base sequence encoding the glycosylation-deficient hepatocyte growth factor having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor into a cell having no glycosylation ability; culturing the cell; allowing the cell to produce a glycosylation-deficient hepatocyte growth factor in the cell or into the cell culture medium; and recovering and purifying the glycosylation-deficient hepatocyte growth factor from the cell or cell culture medium.

16. (Previously Presented) A method for producing the glycosylation-deficient hepatocyte growth factor according to claim 1, comprising the steps of: synthesizing the glycosylation-deficient hepatocyte growth factor by a cell-free protein synthesis system using DNA encoding the glycosylation-deficient hepatocyte growth factor having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor as a template and recovering and purifying the glycosylation-deficient hepatocyte growth factor from the reaction solution.

17. (Previously Presented) A pharmaceutical preparation for injection, inhalation, suppository or oral administration comprising the glycosylation-deficient hepatocyte growth factor according to claim 1 as an active ingredient and a conventional carrier or binder.

18. (Withdrawn) A gene therapy agent containing the DNA according to claim 8 and a gene carrier.

19. (New) A glycosylation-deficient hepatocyte growth factor having no sugar chains, and having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor, which is modified based on the amino acid sequence of SEQ ID NO: 1, wherein modifications represented by (a) to (e) below are applied to the amino acid in SEQ ID NO: 1:

(a) substitution of amino acid 294 and/or 296 by another amino acid, and/or substitution of amino acid 295 by Pro, leading thereby to no glycosylation of the amino acid 294;

(b) substitution of amino acid 402 and/or 404 by another amino acid, and/or substitution of amino acid 403 by Pro, leading thereby to no glycosylation of the amino acid 402;

(c) substitution of amino acid 476 by another amino acid, resulting in no glycosylation of the amino acid 476;

(d) substitution of amino acid 566 and/or 568 by another amino acid, and/or substitution of amino acid 567 by Pro, leading thereby to no glycosylation of the amino acid 566; or

(e) substitution of amino acid 653 and/or 655 by another amino acid, and/or substitution of amino acid 654 by Pro, leading thereby to no glycosylation of the amino acid 653.

20. (New) A glycosylation-deficient hepatocyte growth factor having no sugar chains, and having mutations in its amino acid sequence so that no glycosylation occurs at any glycosylation sites of the hepatocyte growth factor, which is modified based on the amino acid sequence of SEQ ID NO: 2, wherein modifications represented by (a) to (e) below are applied to the amino acid in SEQ ID NO: 2:

(a) substitution of amino acid 289 and/or 291 by another amino acid, and/or substitution of amino acid 290 by Pro, leading thereby to no glycosylation of the amino acid 289;

(b) substitution of amino acid 397 and/or 399 by another amino acid, and/or substitution of amino acid 398 by Pro, leading thereby to no glycosylation of the amino acid 397;

(c) substitution of amino acid 471 by another amino acid, leading thereby to no glycosylation of the amino acid 471;

(d) substitution of amino acid 561 and/or 563 by another amino acid, and/or substitution of amino acid 562 by Pro, leading thereby to no glycosylation of the amino acid 561; or

(e) substitution of amino acid 648 and/or 650 by another amino acid, and/or substitution of amino acid 649 by Pro, leading thereby to no glycosylation of the amino acid 648.

21. (New) A glycosylation-deficient hepatocyte growth factor having no sugar chains, and having an amino acid sequence wherein the amino acids 289, 397, 561 and 648 are substituted by Gln and the amino acid 471 is substituted by Gly in the amino acid sequence represented by SEQ ID NO: 2.